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HEXAGONITE, GOLDSMITH, A VARIETY OF TREMOLITE.

BY GEORGE A. KOENIG, PH.D.

In a paper read by Mr. Goldsmith before the Academy (August 15, 1876), he described a new mineral occurring at Edwards, St. Lawrence Co., N. Y., for which he proposed the name hexagonite. According to his description the mineral is hexagonal in form, is optically uniaxial, and in composition is a bisilicate of magnesium, calcium, and sodium. Mr. Goldsmith assigns it a place in the *beryl* group. Upon inspection of the mineral, the habitus of the crystals struck me as being very little like that of a hexagonal mineral. Some of the crystals, especially the larger ones, have a decided tabular habitus, such as we often find in minerals of the rhombic, monoclinic and triclinic systems. The appearance of the mineral is altogether novel and striking; the fine light amethystine color, and a peculiar lustre, together with the aggregative entwining of the crystals, render it very attractive to the eye. My doubts as to the accuracy of Mr. Goldsmith's determination being roused, I resolved to examine the mineral myself, having been furnished with plentiful material, through Mr. Clarence C. Bement's kindness, who was the first in this city to obtain it.

System of Crystallization, Monoclinic. The crystals form rhombic prisms, showing the faces of a prism and of a pinakoid, the excessive development of the latter producing the tabular shape of the larger crystals. The section of the prism is, of course, a hexagon, but the peculiar mode of aggregation prevented the definite formation of the terminal faces. However, this want is partially supplied by a basal cleavage at such an angle that no doubt can exist as to the monoclinic character of the mineral.

The larger crystals cleave very perfectly according to the prism, and one face with greater perfection than the other, which speaks also for the monoclinic form of the mineral. The angle of cleavage was found $124^{\circ} 35'$.

From a large number of measurements, I select the results obtained from one crystal, which was quite small, but had even and splendid faces.

Readings.	Calculated angles.	Mean.
0° 00' } 62° 30' }	117° 30'	117° 38'
117° 43'	124° 47'	
242° 15'	117° 43'	124° 39'
297° 40'	124° 30'	
360° 00'	117° 40'	

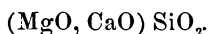
The prismatic angle is therefore 124° 39', corresponding very closely to that of tremolite, 124° 30'. *Color* pink, violet, amethystine; *lustre*, strongly vitreous; cleavage, basal, uneven and prismatic.

H = 6.5. Sp. gr. = 2.996, B. B.

Fuses to a white enamel in a strong flame. The white powder remains unchanged. With borax gives a pure amethyst glass in O. Fl., with sodium carbonate fuses to a glass, which is sky-blue when cold. These reactions indicate manganese. With cobalt solution reacts like an earthy silicate.

Composition.	Oxygen.
SiO ₂ = 58.20	31.021
MgO = 24.14	9.649
CaO = 12.20	3.485
Na ₂ O = 1.90	0.490
MnO = 1.37	0.308
(Al ₂ O ₃ + Fe ₂ O ₃) = 1.40	
	99.21

The oxygen ratio is therefore R: Si = 1: 1.23, and the simplest expression is



Now, if we compare with this the composition of tremolite from Gouverneur N. Y., a white variety, analyzed by Rammelsberg (Pogg. ciii. 299)—

SiO ₂	= 57.40
MgO	= 24.69
CaO	= 13.89
(Al ₂ O ₃ + Fe ₂ O ₃)	= 1.74
H ₂ O + F	= 0.40
	98.12

we see that the new mineral differs from this only by having replaced a small percentage of magnesium and calcium by manganese and sodium. The manganese produces the distinguishing color.